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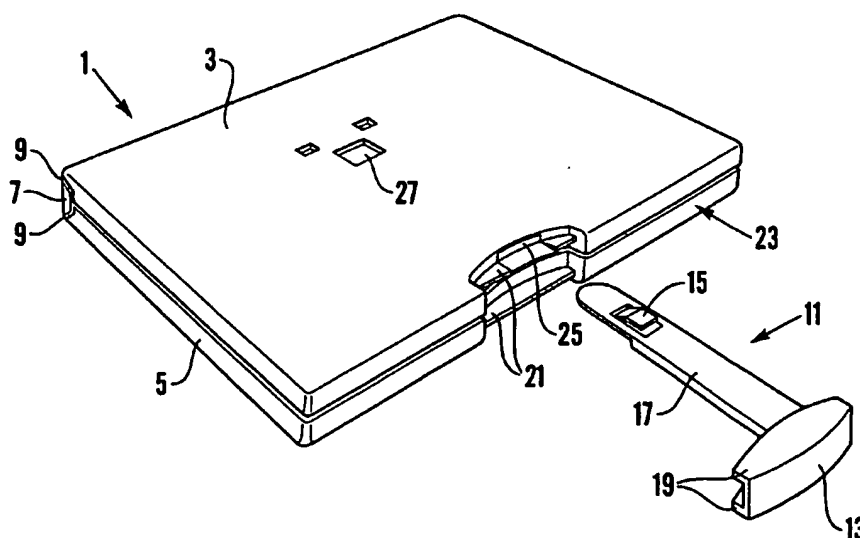
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[Continued on next page]

(54) Title: **CONTAINER WITH LOCKING DEVICE**



(57) Abstract: A container (1) comprises a container body comprising first and second parts (3, 5) which may be brought together to close the container and separated to open the container, and a retaining device (11) comprising a retaining member (13) and a release member (15), wherein the retaining member is securable in a retaining position in which it retains the first and second parts (3, 5) of the container body together and thereby contains the container closed, the retaining member (13) being manually disengageable from its retaining position by movement of the release member (15) with respect to the retaining member (13). The container is particularly suitable for containing one or more packs of pharmaceutical tablets.



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## CONTAINER WITH LOCKING DEVICE

The present invention relates to containers, and in particular to devices for retaining containers closed. The invention is particularly concerned with containers for pharmaceutical tablets and the like, but it is generally applicable to containers having other uses.

A first aspect of the invention provides a container which comprises a container body comprising first and second parts which may be brought together to close the container and separated to open the container, and a retaining device comprising a retaining member and a release member, wherein the retaining member is securable in a retaining position in which it retains the first and second parts of the container body together and thereby retains the container closed, the retaining member being manually disengageable from its retaining position by movement of the release member with respect to the retaining member.

Preferably, such movement of the release member with respect to the retaining member either disengages the retaining member from its retaining position, or enables the retaining member to be disengaged from its retaining position. Advantageously, subsequent movement of the retaining member with respect to at least one of the parts of the container body preferably either opens the container or allows the container to be opened.

A second aspect of the invention provides a container which comprises a container body comprising first and second parts which may be brought together to close the container and separated to open the container, and a retaining device comprising a retaining member and a release member, the release member being engageable, by manually releasable interlocking, with the container body or a component thereof such that when so engaged it secures the retaining member in a retaining position in which the first and second parts of the container body are

retained together and when disengaged it enables the retaining member to be moved from its retaining position to release the first and second parts of the container body.

(At least in the second aspect of the invention, the release member may be regarded as a securement member, or a securement and release member.)

The invention has the advantage that the function of retaining the container closed (which is carried out by the retaining member) is separated from the function of releasing the retaining member from its securement in its retaining position in which it retains the container in its closed state (which is carried out by the release member). This is advantageous for several reasons.

Firstly, the separation of functions can provide a child-proof or child-resistant opening mechanism for the container, which may be important, for example, when the container is used for pharmaceutical tablets and the like. This is because small children will typically be unable to carry out both (or all) of the actions required to open the container, or they may be unable to appreciate that the two (or more) actions are required.

Secondly, the fact that at least two separate actions (namely releasing the retaining member and opening the container, or alternatively releasing the retaining member, moving the retaining member, and opening the container) are required to open the container generally provides a degree of security against accidental opening of the container.

Thirdly, the separation of the retaining and securing functions can enable the container to be designed for ease of use by the elderly or disabled. This is because, by physically separating the actions required

firstly to *enable* the container to be opened and secondly *actually to open* the container, the opening of the container (which initially is securely closed) can be made easier for people with manual dexterity difficulties (for example the arthritic). For example, the physical spacing and/or the size of container components arranged to carry out the two actions may be made sufficiently large to facilitate their use by such people.

It was mentioned above that the container body comprises first and second parts which may be brought together to close the container and separated to open the container. The first and second parts may be entirely separate, and only brought together, and retained together, when the container is closed. Alternatively, the first and second parts of the container body may be connected to each other even when the container is open. For example, the first and second parts may be connected by means of one or more hinges or the like by which they may be rotated with respect to each other in order to open or close the container.

The first part of the container may comprise a lid or outer sleeve of the container, and the second part of the container may comprise a base of the container or a tray of the container arranged to be received in the sleeve. The base may be larger than the lid, or the lid may be larger than the base, but in a preferred embodiment of the invention, which is particularly suitable for holding pharmaceutical tablets and the like, the base and the lid are of substantially the same size and shape.

In addition to the first and second parts of the container body, the container body may comprise one or more additional parts. For example, some embodiments of the invention include a third part of the container body forming a hinge region of the container between the first and second parts.

It was also mentioned above that the retaining device comprises a retaining member and a release member. In its retaining position, the

retaining member retains the first and second parts of the container body together such that the container cannot be opened. In this position, the retaining member preferably therefore engages with both the first and second parts of the container body to prevent their separation. Advantageously, the retaining member may comprise an integral part of either the first or the second part of the container body (e.g. the second part, especially if it is in the form of a base or tray). Alternatively, the retaining member may comprise two (or more) spaced apart arms, each of which is arranged to engage with a respective part of the container body to prevent their separation. Such engagement of the retaining member arms with the container body parts may comprise the insertion of the arms into corresponding slots or other apertures in the respective body parts, or it may comprise location of the arms on corresponding ledges of the respective body parts, for example.

In some embodiments of the invention, the release member of the retaining device comprises a securement member which not only causes the retaining member to be released from its retaining position but which also secures the retaining member in its retaining position prior to causing such release when moved. In such embodiments, the release member preferably is manually releasably interlockable with the container body or a component thereof, for example by being manually depressed. For example, the release member may comprise a projection, preferably a resiliently flexible projection, arranged to interlock with a corresponding recess or other aperture, or with a corresponding projection, in or on the container body. Additionally or alternatively, the release member may comprise a recess or other aperture arranged releasably to receive a projection (e.g. a resiliently flexible projection) of the container body therein. For example, the release member may comprise a resiliently flexible detent arranged to form a snap-fit in a recess or other aperture, or with a corresponding projection, in or on the container body.

In such embodiments, the release member is preferably engageable with the first and/or second part of the container body. In preferred embodiments, the release member is engageable with only one of either the first part or the second part of the container body. For example, the release member may be engageable with a lid of the container.

In other embodiments of the invention, the release member of the retaining device does not itself secure the retaining member in its retaining position (i.e. the release member is not also a securement member) but instead functions merely to release the retaining member from its retaining position. In such embodiments, actuation of the release member by moving the release member relative to the retaining member causes the retaining member to be released from its retaining position. This may be achieved, for example, by the release member disengaging the retaining member from an interlocking engagement with one or more of the parts of the container body. For example, the retaining member may be resiliently biased to interlock with one or more parts of the container body (thereby to retain the container closed); actuation of the release member by moving it relative to the retaining member may cause the release member to act against such resilient biasing to release the retaining member. This may, for example, be achieved by means of one or more wedges or chamfered surfaces of the release member.

The release member may itself be accessible from the exterior of the container. Alternatively, the release member may not be directly accessible from the exterior of the container, but instead may be indirectly accessible, for example by means of a button or the like, or a depressible membrane. However, even though the release member may be only indirectly accessible, the expression "manually disengageable" is intended to mean that the retaining member does not require the use of a tool to release it from its engagement with the container body (or a component thereof).

The release member and the retaining member of the retaining device are preferably spaced apart from each other but physically interconnected. This may be achieved, for example, by means of another member forming part of the retaining device, to which both the release member and the retaining member are joined.

The container body and/or the retaining device is/are preferably formed from a polymer material, for example a polyolefin (e.g. polypropylene), a polyacrylate, Nylon (trade mark) or the like. The container body and preferably also the retaining device, is/are preferably moulded, more preferably injection moulded. Advantageously, the container body may be injection moulded as a single integral article. Additionally or alternatively, other materials, for example metals and/or card may, be used.

As already mentioned, a preferred use of the container according to the invention is for containing pharmaceutical tablets, pills, capsules, or the like. The expression "pharmaceutical tablets" is used in this specification to include any kind of pharmaceutical, medicinal (conventional or alternative), homeopathic, nutritional (including vitamins and minerals etc) or similar tablet, pill, capsule, etc., or any other discrete dose, whether solid, liquid, or semi-liquid. Preferably such tablets are themselves held in one or more generally flat packs, for example formed from metal foil and/or flexible polymeric material and/or card and/or paper. Such packs include so-called "blister packs" comprising a vacuum formed tray provided with depressions for the tablets, the tray being sealed (normally heat sealed) by means of a covering layer, normally of metal foil or polymeric material or paper or card. For such embodiments of the invention, the interior of the container preferably includes means for holding the or each pack of tablets, for example one or more retaining clips, e.g. arranged to engage one or more respective apertures provided in the, or each, pack of tablets.



Preferred embodiments of the invention will now be described, by way of example, with reference to the accompanying drawings, of which:

Figure 1 shows an embodiment of a container according to the invention, including a retaining device shown separately from the body of the container;

Figure 2 shows a detail of the exterior of the container of Figure 1, with the retaining device partly inserted into the container;

Figure 3 shows a detail of the interior of the container of figure 1 and 2, with the retaining device fully inserted into the container;

Figure 4 (views a and b) shows two details of retaining clips for holding packs of tablets within a container according to the invention;

Figure 5 (views a to c) shows two details of an alternative form of retaining clip for holding packs of tablets within a container according to the invention;

Figure 6 shows the various major components of a second embodiment of a container according to the invention;

Figure 7 shows, separately, the tray (or second part of the container body) of the container of Figure 6;

Figure 8 shows the tray of Figure 7 immediately subsequent to its removal from the sleeve (or first part of the container body);

Figure 9 shows the container of Figures 6 to 8 fully closed; and

Figure 10 (views (a) and (b)) shows a third embodiment of container according to the invention.

Figure 1 shows a container 1 suitable for pharmaceutical tablets, which comprises a container body comprising a first part 3 in the form of a lid, and a second part 5 in the form of a base. The container, which is formed from a polymer material, for example polypropylene, is generally rectangular in plan view and has a thin, flat, shape, making it suitable to contain one or more generally flat foil packs of tablets, for example.

The first and second parts 3 and 5 of the container body are connected to each other by means of hinge region comprising a third part 7 of the container which forms one thin edge of the container and which is itself joined to both the first and second container body parts by means of webs 9 of the polymer material. The polymer webs act as hinges, allowing the first and second parts 3 and 5 of the container body to be brought together (at their opposite edges) to close the container and separated (at their opposite edges) to open the container. As shown in Figure 1, the container is closed.

Figure 1 also shows a retaining device 11 that also forms part of the container, and which is formed from Nylon (trade mark). The retaining device 11 comprises a retaining member 13 and a release member 15 which are interconnected by means of an elongate member 17. The retaining member comprises a pair of spaced apart arms 19 which are sized and shaped to locate with corresponding ledges 21 formed in the opposing first and second container body parts 3 and 5 in the thin edge 23 of the container opposite to the hinged edge 7. When the arms 19 of the retaining member are so located on the ledges 21, i.e. the retaining member is in its retaining position, the container is prevented from being opened.

The elongate member 17 of the retaining device 11 is joined to one of the spaced apart arms 19 of the retaining member of the device, and extends away from the arm in substantially the same direction as that in

which the arm extends. The elongate member 17, which has the form of a substantially rigid strip, is sized and shaped to be received in a slot 25 provided in a recess formed to accommodate the ledge 21 in the lid 3 when the retaining member 13 is in its retaining position (i.e. located on the ledges 21).

When the retaining member 13 is in its retaining position, and the elongate member 17 is received within the slot 25 so that it extends into the interior of the container, the release member 15, which is in the form of a resiliently flexible projection or detent carried by the elongate member, is releasably engaged with an aperture 27 provided in the container lid 3. In this way, the release member 15 secures the retaining member 13 in its retaining position in which the first and second parts 3 and 5 of the container body are retained together. The release member 15 is disengageable from the aperture by pressing down upon the release member from the exterior of the container 1. When disengaged, the release member 15 enables the retaining member 13 to be moved from its retaining position to release the first and second parts of the container body, thereby allowing the container to be opened. It will thus be appreciated that the functions of retaining the container closed, and securing the container in its closed state, are separated, and in order to open the container, two separate actions (prior to actually opening the container) are required.

Figure 2 shows a detail of the retaining member 13 of the retaining device 11, with the elongate member partially inserted into the slot 25 in the container lid 3 (which in this view is shown beneath the base 5 of the container).

Figure 3 shows a detail of the interior of the container, and in particular a detail of the interior underside 29 of the lid 3 (the base 5 is not shown). The retaining member 13 is in its retaining position (although it is located on the ledge of the lid 3 only, since the base is not

shown, for clarity). The elongate member 17 of the retaining device 11 is shown extending through the slot 25 in the lid, and extending along the underside 29 of the lid. The elongate member 17 is guided by means of a pair of guide members 31 formed on the underside 29 of the lid 3, the guide members being shaped and sized to guide a bevelled end region 31 of the elongate member. The release member 15, which as already mentioned comprises a resiliently flexible projection or detent is received within the aperture 27 in the lid 3.

Figure 4(a) shows a detail of the interior of a modified form of the container shown in figures 1 to 3. Specifically, the detail shows one end of the hinge region of the container, including the edge portion 7 of the container. The interior of the edge portion includes a plurality (three as shown) of retaining clips 33 for holding a pack 35 of tablets (as herein defined) to be stored in the container. There will be a corresponding set of three retaining clips at the opposite end of the hinge portion (not shown). The retaining clips 33 are arranged to be received in apertures 37 provided in an edge region of the tablet pack. As shown, alternate clips are arranged in opposing orientations, and as shown in Figure 4(b) the opposing clips are arranged to overlap slightly in profile, so that each tablet pack is trapped and therefore held by the clips. However, the clips are curved, thereby allowing the tablet packs to be pivoted while being held by the clips, for ease of access and removal of tablets from each pack.

Figure 5 (views a to c) shows an alternative form of retaining clip 38 for a tablet pack, in which an overhanging clip portion 39 extending substantially parallel to the interior of the base 5 of the container has a downwardly projecting spur 41 which projects into an aperture 43 provided in the base 5 below the overhanging clip portion 39. The spur 41 has an inclined leading edge 45 to facilitate the insertion of an edge of a tablet pack so that an aperture 37 in the tablet pack can engage with the spur. Removal of the tablet pack from the retaining clip is more

difficult than its insertion, because the back edge of the spur 41 is not inclined. Figure 4(a) is a perspective view of the retaining clip 38 and tablet pack 35, Figure 4(b) is a side view, and Figure 4(c) is a plan view of the underside of the base 5.

Figure 6 shows a second embodiment of the invention, comprising a sleeve 51 (or first part) and a tray 53 (or second part) which together comprise a container. Also shown is a blister pack 55 of tablets which is sized and shaped to be received and retained in the tray 53 under detents 57 provided in side walls of the tray (as shown in Figure 8). Additionally, a card inlay 59 (which may be printed with a design and/or information pertaining to the tablets, for example) is also shown. The card inlay 59 is also sized and shaped to be retained in the tray 53 under the detents 57, and includes apertures 61 through which the tablet "blisters" and other projections on the blister pack may project (also as shown in Figure 8).

The sleeve 51 is sized and shaped to receive the tray 53 (containing the blister pack and the card inlay) as a snug fit therein. The sleeve (which preferably is formed from card, but may be formed from a plastics material for example) comprises a generally rectangular box which is closed except for an open end 63 through which the tray may be inserted into, and removed from, the sleeve. The tray 53 preferably is formed from a plastics material (and preferably is injection moulded).

Figure 7 shows the tray 53 of Figure 6 alone. The tray 53 comprises a containment portion 65 in which, for example, a pack of tablets (as shown in Figure 6) may be contained. The tray 53 also comprises a retaining device 67 which is an integral part of the tray (and preferably moulded as such). The retaining device 67 comprises a pair of retaining members 69 and a release member 71. Each retaining member 69 comprises a pivoted flap of part of a side wall of the tray, the flap being resiliently biased (by means of an injection moulded "live" hinge 73) outwardly as shown in Figure 7. The release member 71 comprises a

plate joined to an end wall 75 of the tray by means of an injection moulded live hinge such that the plate is resiliently biased to extend in a direction away from the remainder of the tray, as shown in Figure 7. Opposite ends of the release member 71 include projections 77, each of which has a chamfer 79 extending from an end thereof on an inwardly facing surface of the projection. These projections 77 and chamfers 79 are arranged to fit into corresponding chamfered apertures 81 provided on the interior surface of each retaining member 69, as will be explained with reference to Figure 8.

Figure 8 shows the container of Figures 6 and 7 with the tablet blister pack 55 and inlay card 59 contained in the tray 53, and retained under detents 57. The tray 53 is shown immediately subsequent to its removal from the sleeve 51 (or alternatively immediately prior to its insertion in the sleeve). The release member 71 has been folded over a low part of the end wall 75 of the tray to which it is joined by means of a live hinge, so that the plate of the release member lies generally parallel to the plane of the tray and overlies an end region of the tray. With the release member 71 in this orientation, the tray may be inserted into the sleeve 51 so that the tray is fully contained within the sleeve.

When the tray 53 is fully inserted into the sleeve 51, the retaining members 69 (which are biased outwardly against the side wall of the sleeve) interlock with projections and/or recesses (e.g. cut outs – not shown) provided on the internal surfaces of the side walls of the sleeve. In this manner, the tray is prevented from being removed from the sleeve. An end region of an upper surface of the sleeve (at the opposite end of the sleeve to the open end 63) contains a slot which provides a depressible flap 83 in the upper surface of the sleeve. This depressible flap 83 (which preferably includes a marking, e.g. as shown, to indicate that it should be depressed) is arranged to be in alignment with the release member 71 when the tray is contained in the sleeve. If the flap 83 is depressed, this causes the release member 71 also to be depressed

relative to the remainder of the tray. The depression of the release member causes the projections 79 to extend into the apertures 81 of the retaining members 69, and the chamfered surfaces of the projections 79 and the apertures 81 cooperate to pull the retaining members inwards, thereby releasing them from their interlocking engagement with the interior of the sleeve. The tray 53 may then be withdrawn from the sleeve 51 with the aid of a "finger pull" recess 85 provided at the opposite end of the tray, which is accessible via a corresponding cut-out portion 87 of the sleeve.

The tray 53 may therefore be removed from the sleeve 51 only by means of a two step procedure, whereby retaining members on the tray (which retain the container closed) are firstly released from their retaining position by means of a release member of the tray, and subsequently the tray may be withdrawn from the sleeve.

Figure 10 (views (a) and (b)) shows a third embodiment of a container according to the invention. This embodiment also comprises a tray 93 which is slidably received within a sleeve 91. In this embodiment, however, the retaining device 95 comprises a sheet (for example of card or plastics material) which has a groove 97 formed across its width and which causes the sheet to be resiliently biased towards a contracted configuration. Additionally, in this embodiment the retaining device forms part of the sleeve 91 (rather than the tray 93) and preferably is adhered to an interior surface of the sleeve by means of adhesive 99.

When the tray 93 is fully inserted in the sleeve 91 and the retaining device 95 is in its relaxed (contracted) configuration, the groove 97 interlocks with corresponding grooves 101 (only one of which is shown) in the sidewalls of the tray 93, thereby preventing the withdrawal of the tray from the sleeve. In order to withdraw the tray from the sleeve, it is necessary to pull the sheet retaining device 95 relative to the tray and the

sleeve in the direction indicated by the arrow in Figure 10(a). A portion 102 of the retaining device 95 is accessible from the exterior of the container via a cut out portion 103 of the sleeve, and the accessible portion 102 constitutes the release member of the retaining device. Pulling the sheet retaining device with respect to the remainder of the container in this way straightens the sheet, thereby releasing the groove 97 (which constitutes the retaining member of the retaining device) from the corresponding grooves 101 (i.e. releasing the retaining member from its retaining position) and allowing the tray 93 subsequently to be withdrawn from sleeve 91.



Claims

1. A container which comprises a container body comprising first and second parts which may be brought together to close the container and separated to open the container, and a retaining device comprising a retaining member and a release member, wherein the retaining member is securable in a retaining position in which it retains the first and second parts of the container body together and thereby retains the container closed, the retaining member being manually disengageable from its retaining position by movement of the release member with respect to the retaining member.
2. A container according to Claim 1, in which said movement of the release member disengages the retaining member from its retaining position.
3. A container according to Claim 1, in which said movement of the release member enables the retaining member to be disengaged from its retaining position.
4. A container according to any preceding claim in which the container is arranged such that after said movement of the release member, movement of the retaining member with respect to at least one of the parts of the container body opens the container.
5. A container according to Claim 4, in which said movement of the retaining member comprises movement of one of the parts of the container body with respect to the other part of the container body, causing the container to be opened.

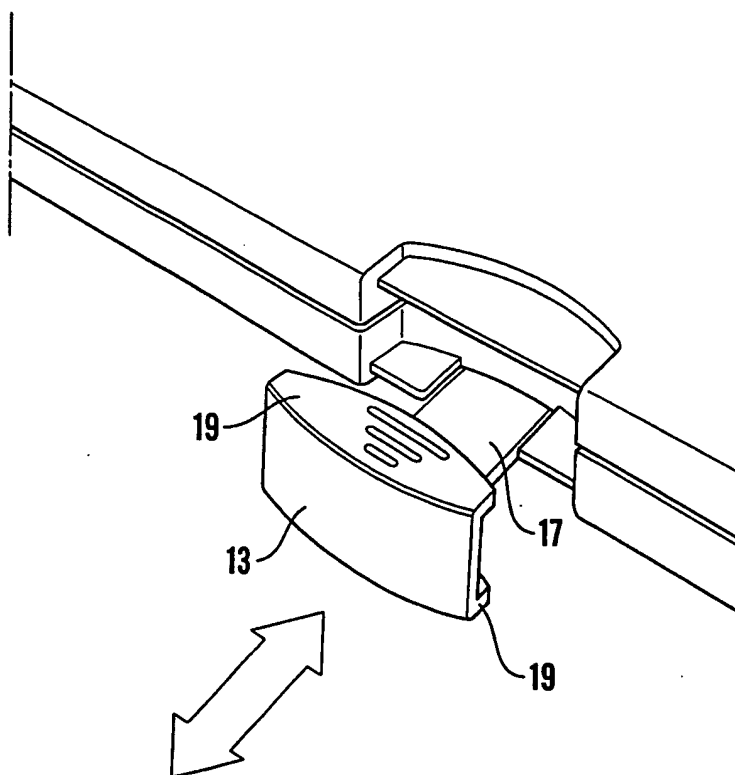
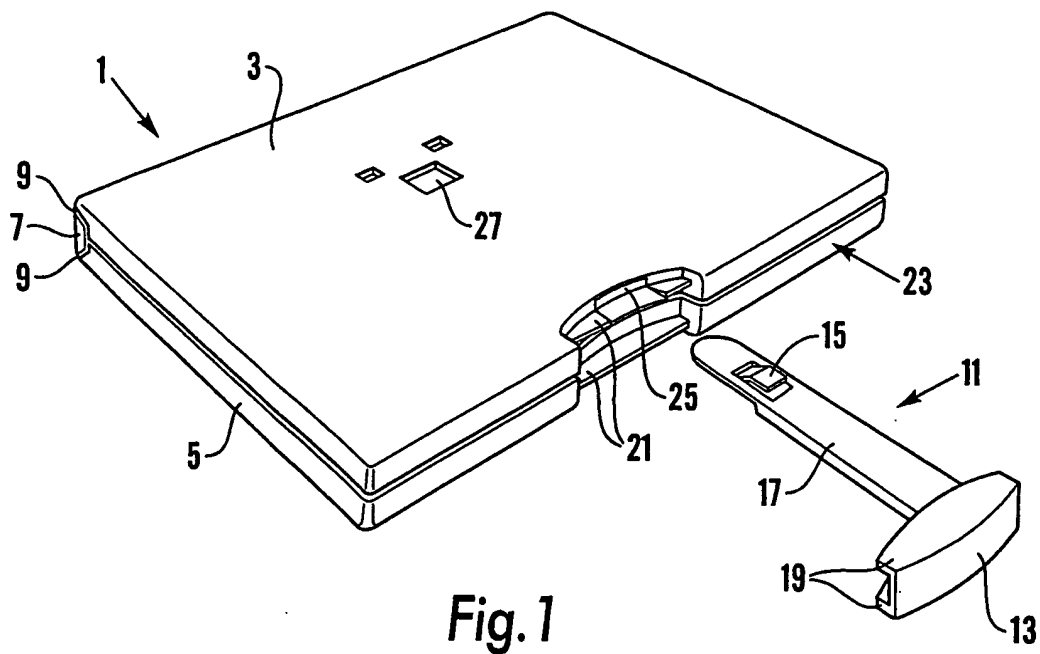
6. A container according to any one of Claims 1 to 3, in which the container is arranged such that after said movement of the release member, movement of the retaining member with respect to at least one of the parts of the container body allows the container to be opened.
7. A container according to any preceding claim, in which the retaining device and one of the first or second parts of the container body have been formed as a single integral part.
8. A container according to any preceding claim, in which the retaining member of the retaining device comprises a member of one of the parts of the container body that is resiliently biased to press against the other part of the container body when the container is closed.
9. A container according to Claim 8, in which the retaining member is resiliently biased to press outwardly against an interior surface of the other part of the container body.
10. A container according to Claim 8 or Claim 9, in which the retaining member is a member of the second part of the container body.
11. A container according to any one of Claims 8 to 10, in which the retaining member interlocks with a recess, aperture or protrusion of the other part of the container body when the retaining member is in its retaining position.
12. A container according to any one of Claims 8 to 11, in which the movement of the release member acts against the resilient bias of the retaining member to disengage the retaining member from its retaining position.

13. A container according to Claim 12 when dependent upon Claim 9, in which the movement of the release member causes a retraction of the retaining member away from the interior surface of the other part.
14. A container according to any preceding claim, in which the release member and the retaining member have chamfered surfaces which cooperate to disengage the retaining member from its retaining position upon said movement of the release member.
15. A container according to Claim 8 or any other claim dependent thereon, in which the release member is a member of the same part of the container body as that of the retaining member.
16. A container according to any preceding claim, in which the release member is directly or indirectly accessible from the exterior of the container.
17. A container according to Claim 16, in which the release member is only indirectly accessible from the exterior of the container when the container is closed, for example by means of a button, membrane or flap.
18. A container according to any preceding claim, in which the release member is arranged to disengage the retaining member from its retaining position by being manually depressed from the exterior of the container.

19. A container according to any preceding claim, in which the release member is engageable, by manually releasable interlocking, with the container body or a component thereof, such that when so engaged it secures the retaining member in its retaining position.
20. A container which comprises a container body comprising first and second parts which may be brought together to close the container and separated to open the container, and a retaining device comprising a retaining member and a release member, the release member being engageable, by manually releasable interlocking, with the container body or a component thereof such that when so engaged it secures the retaining member in a retaining position in which the first and second parts of the container body are retained together and when disengaged it enables the retaining member to be moved from its retaining position to release the first and second parts of the container body.
21. A container according to Claim 20, in which the release member comprises a projection arranged to interlock with a corresponding aperture in or on the container body.
22. A container according to Claim 20 or Claim 21, in which the release member comprises an aperture arranged releasably to receive a projection of the container body therein.
23. A container according to any one of Claims 20 to 22, in which the release member is engageable with only one of either the first part or the second part of the container body.

24. A container according to any preceding claim, in which the first part of the container comprises a lid or sleeve of the container and the second part of the container comprises a base or tray of the container, the tray being receivable in the sleeve to close the container.
25. A container according to any preceding claim, in which the first and second parts of the container body are connected by means of one or more hinges by which they may be rotated with respect to each other in order to open or close the container.
26. A container according to any preceding claim, in which the release member and the retaining member are spaced apart from each other but are physically interconnected.
27. A container according to Claim 26, in which the retaining device further comprises a member to which both the release member and the retaining member are joined.
28. A container according to any preceding claim, which is suitable for holding one or more generally flat packs of pharmaceutical tablets, the interior of the container including means for holding the, or each, pack of tablets.
29. A container according to Claim 28, in which the holding means comprises one or more retaining clips arranged to engage the, or each, pack of tablets.

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**Fig.2**

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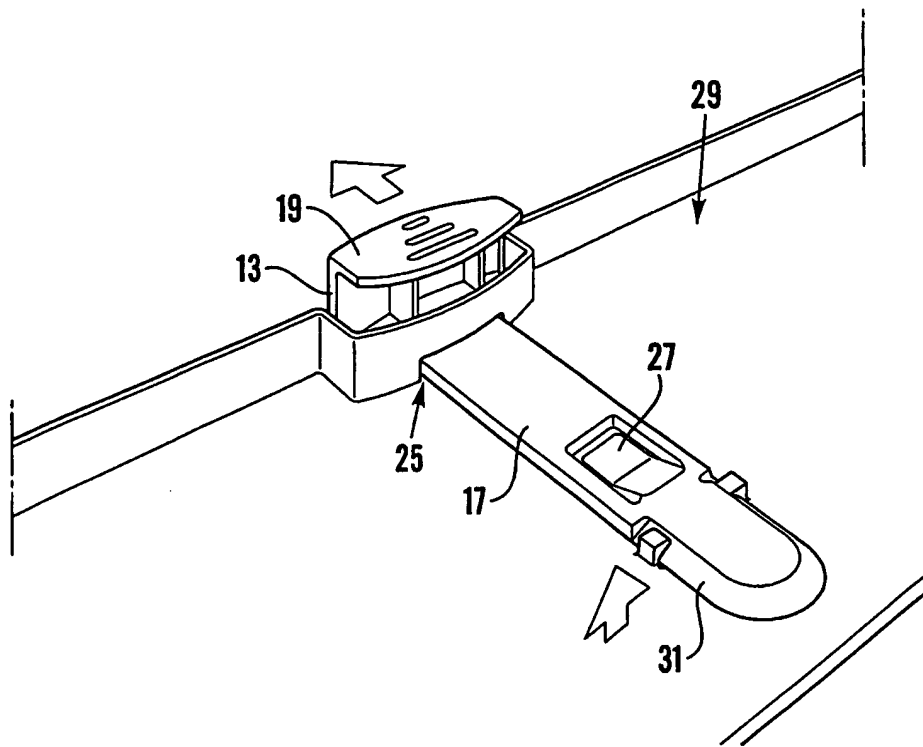


Fig. 3

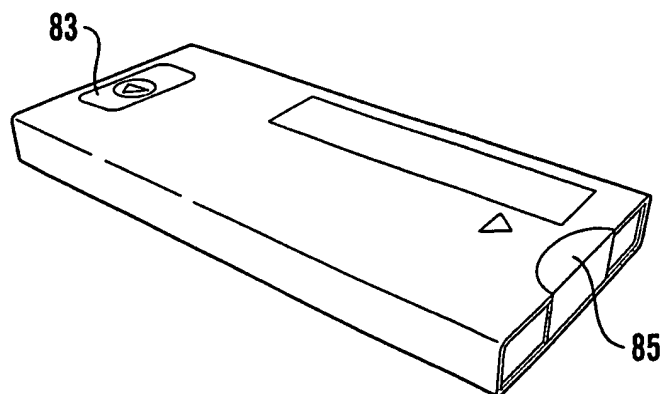


Fig. 9

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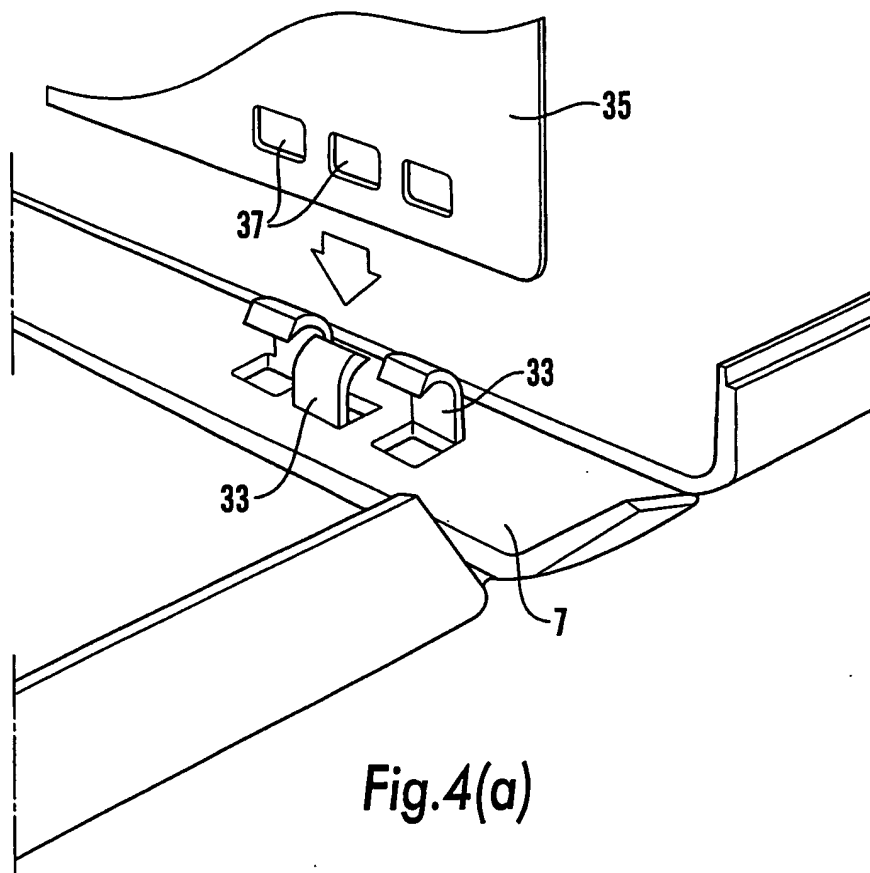


Fig.4(a)

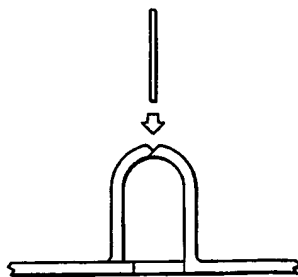


Fig.4(b)



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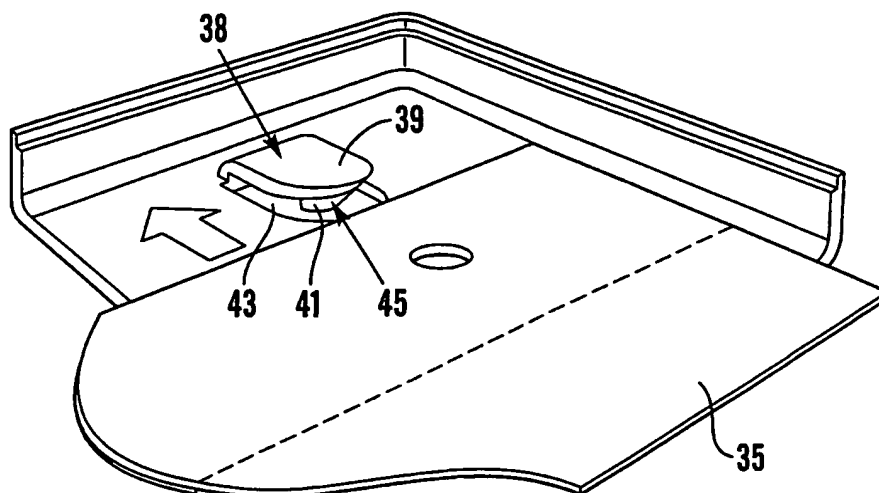


Fig.5(a)

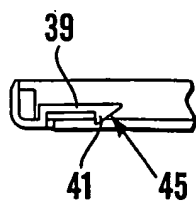


Fig.5(b)

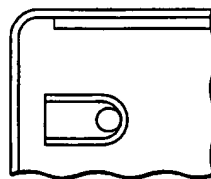


Fig.5(c)

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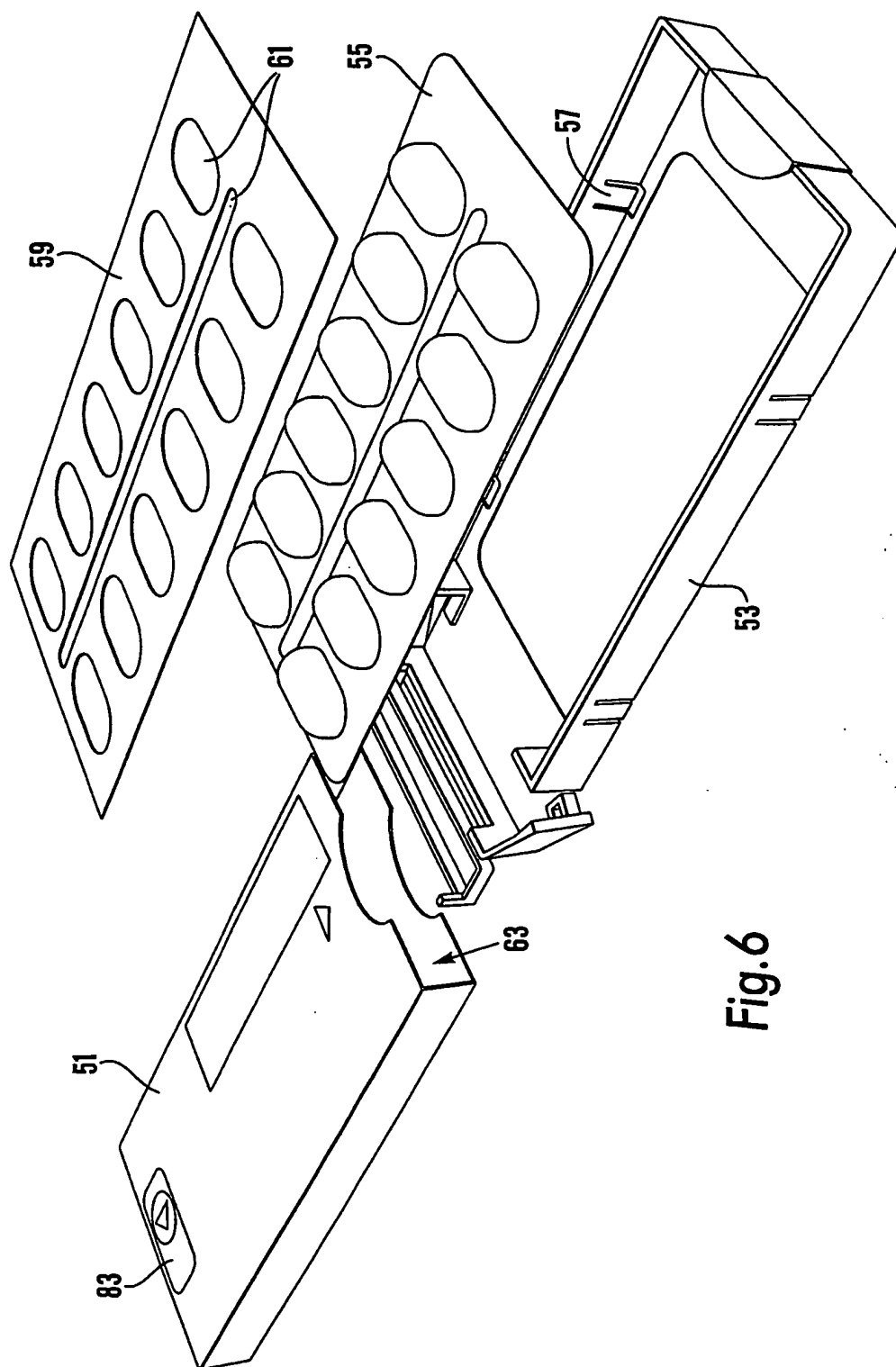


Fig. 6

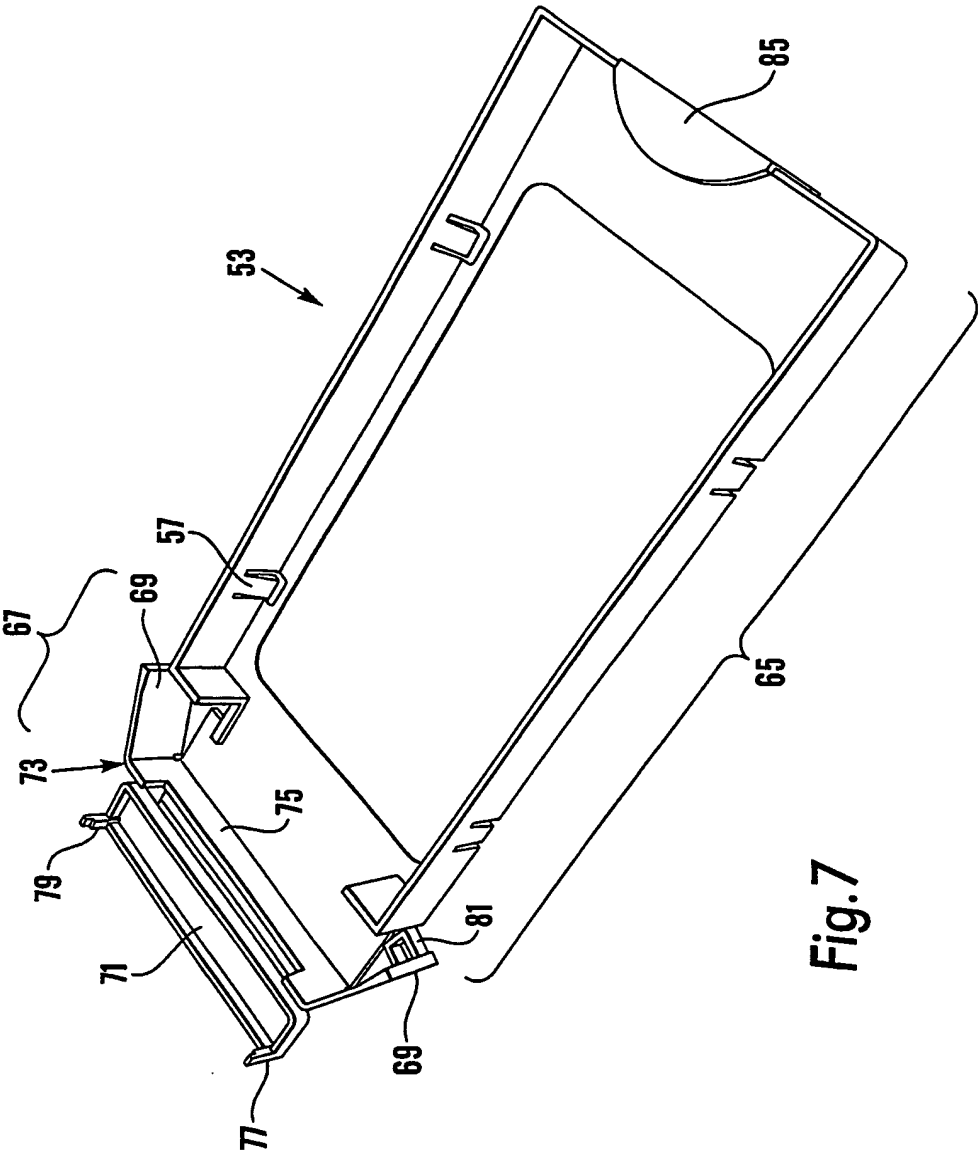


Fig. 7

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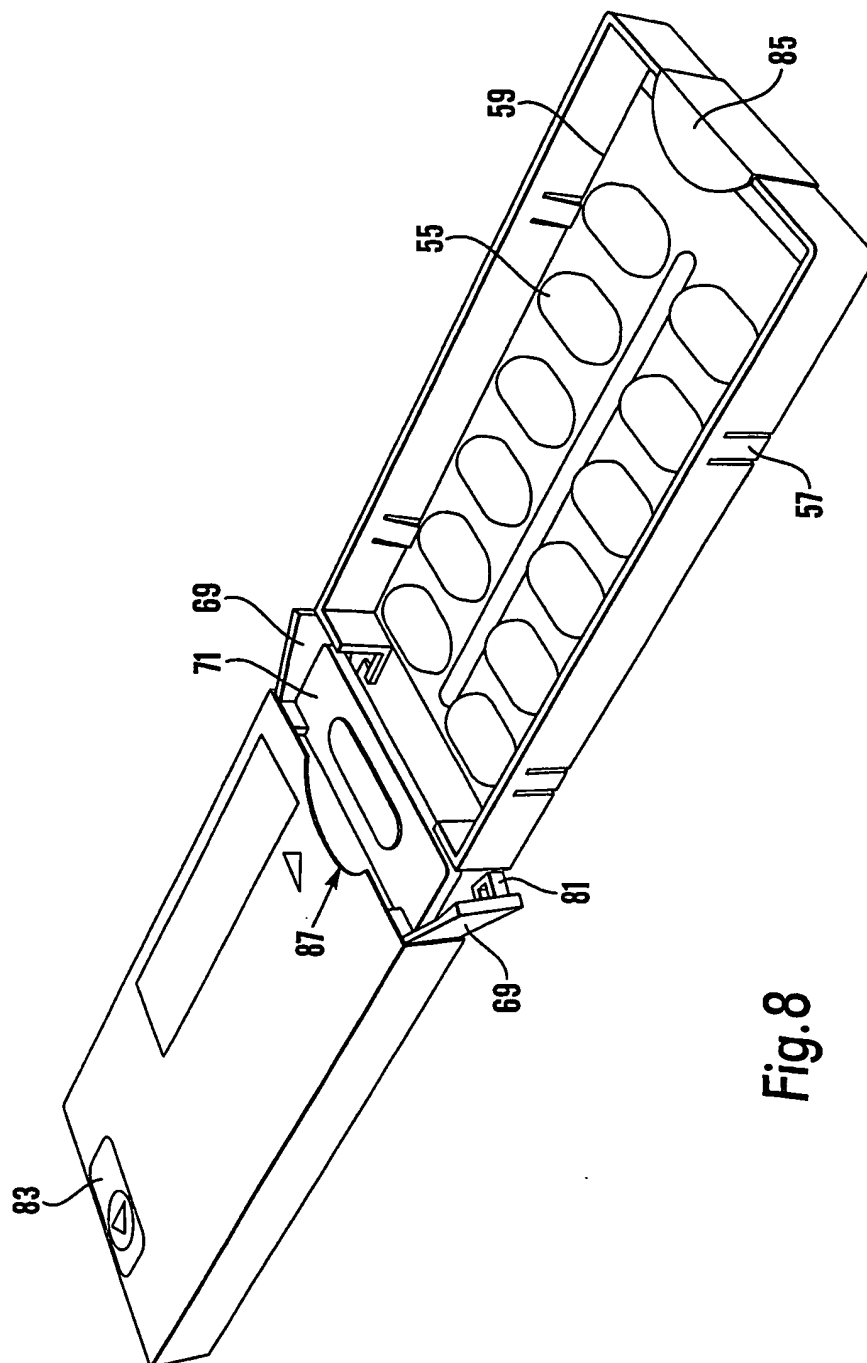


Fig.8

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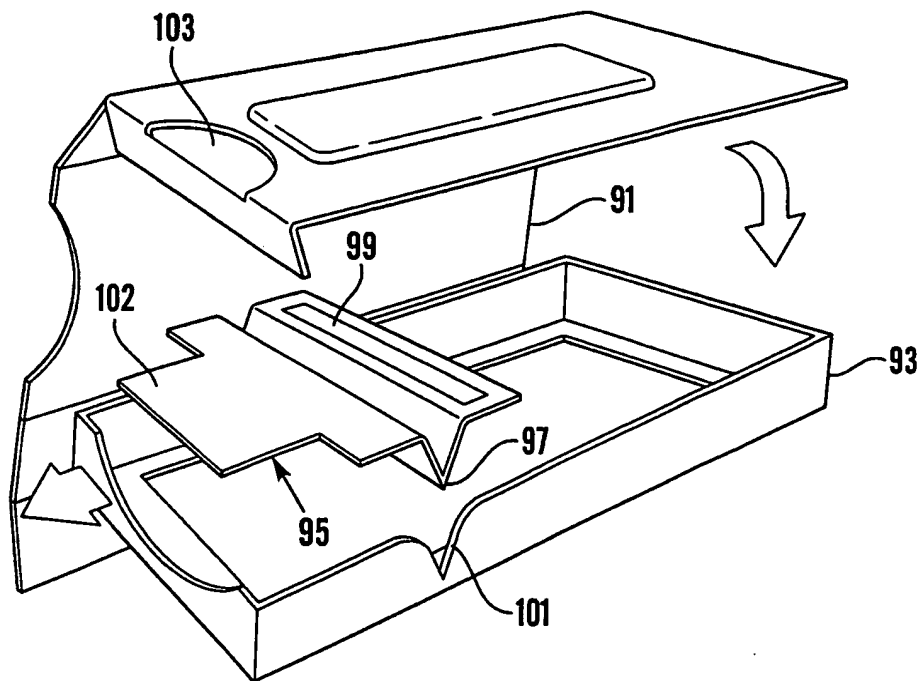


Fig. 10(a)

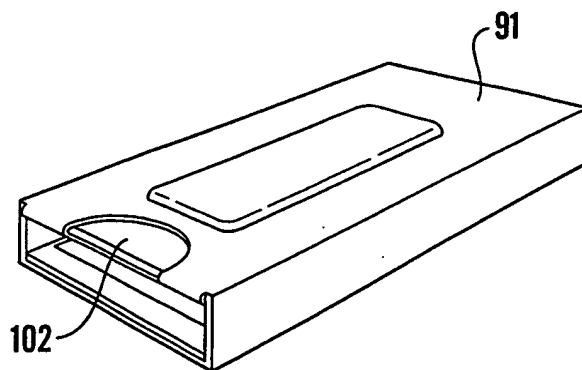


Fig. 10(b)

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 02/04132

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B65D50/04 B65D55/02

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B65D A61J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 006 941 A (HITCHINGS GLENN E) 28 December 1999 (1999-12-28)  column 3, line 15 -column 4, line 63; figures 1-4	1,2,4,5, 7,14, 16-18
X	WO 99 24679 A (THOMPSON GUY R ;JOHNSON & SON INC S C (US)) 20 May 1999 (1999-05-20)  page 7, line 21 -page 9, line 5; figures 1-5	1,3,6,7, 16,19, 20,23-25
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☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

9 December 2002

Date of mailing of the international search report

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## INTERNATIONAL SEARCH REPORT

International Application No

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